Spillover Effects of NTM Reductions[1]

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I. Introduction

The recent bilateral and multilateral free trade agreements (FTAs) and economic partnership agreements (EPAs), including the Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP), have been expected to cover, in addition to tariff reductions, reductions of non-tariff measures (NTMs) and the liberalization of services and investment.

This article quantitatively investigates two key elements for analysis of the impact of NTM reductions: (a) the measurement of the levels of NTMs in terms of ad valorem equivalent (AVE); and (b) the significance of the spillover effects of NTM reductions to third party non-members of those FTAs/EPAs. A Computable General Equilibrium (CGE) model of global trade is used for the modeling studies presented here.[2]

II. Estimated AVEs of NTMs

The United Nations Conference on Trade and Development (UNCTAD) and the World Bank (WB) have collected NTM data and estimated the AVEs of NTMs.[3] Those estimated AVEs have been updated consistent with the GTAP 11 Data Base and further adjusted using the substation elasticities of the GTAP database and would be incorporated

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[1] The views expressed in this article are the author's own and do not represent those of GRIPS Alliance or other organizations to which the author belongs.

[2] That model is based on the Global Trade Analysis Project (GTAP) 11b Data Base and the GTAP 7 Model is solved using GEMPACK software referred to in Horridge, Jerie, Mustakinov & Schiffmann (2018), GEMPACK Manual, ISBN 978-1-921654-34-3, incorporating dynamic effects of capital accumulation, endogenous labor supply and productivity improvement.

[3] The development of that joint work is reported in UNCTAD and WB (2018), *The Unseen Impact of Non-Tariff Measures: Insights from a New Database*. The latest methodology for estimating the AVEs of NTMs is described in Kee, H. L. and A. Nicita (2022), "Trade fraud and non-tariff measures," *Journal of International Economics* 139, Elsevier, November 2022.

Table 1 Trade protection rates by sector and region

(%)

	Tariffs	NTMs		Tariffs	NTMs
Agri. forest. and fisheries	4.39	7.13	Australia	1.77	3.41
Mining	0.39	1.36	China	3.71	4.77
Processed foods	6.14	5.57	Japan	2.07	3.33
Textiles and apparel	5.88	1.42	ASEAN	1.94	2.93
Other manufacturing	1.57	1.74	India	5.79	2.19
Chemical products	2.07	2.53	US	1.54	4.09
Metals	1.60	2.15	Central and south America	5.82	3.87
Motor vehicles	3.58	3.18	EU	0.64	1.04
Other machinery	1.84	2.85	Russia	4.86	5.47
Electronic products	0.89	2.57	Africa	7.71	3.04
Average	2.34	2.72	World	2.34	2.72

Source: Author's calculations based on GTAP 11b Data Base, 2017 and Satellite Data, GTAP.

in the GTAP 11 Satellite Data.[4] The estimated AVE rates of NTMs are compared with tariff rates in the same reference year (2017) in Table 1. The average rate of aggregated AVEs of NTMs of sectors and regions is estimated to be 2.72%, which is slightly higher than the corresponding average tariff rate (2.34%).

By sector, the AVE rates of NTMs are estimated to be higher in agriculture, forestry and fisheries (7.13%) and processed foods (5.57%) than in the other manufacturing sectors, but not higher in textiles and apparel, in which tariff rates are higher than in the other manufacturing sectors. On the other hand, the AVEs of NTMs are indicated to be equivalent to the sectoral average in electronic products, for which tariff rates are suggested to be far lower than the sectoral average.

By region, the AVE rates of NTMs are estimated to be higher in Russia (5.47%) and China (4.77%) but lower in the European Union (EU) (1.04%). They are higher in the other countries (3.4% on average) than in the Organisation for Economic Co-operation and Development (OECD) countries and others (2.2% on average),[5] but that difference is smaller than that in tariffs (4.2% and 1.1%, respectively).

That said, by country and by sector, various differences and features are seen, alongside the generally high levels of the AVE rates of NTMs in agriculture, forestry and fisheries, and processed foods. For example, in Japan, the AVE rate for motor vehicles is high (11.1%), where tariffs are not imposed. In the United States (US), the AVE rates are

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[4] Corong, E. and A. Nicita (forthcoming), *The GTAP Data Base version 11 Non-Tariff Measures (NTM) Satellite Data Base*, Center for Global Trade Analysis, Purdue University.
[5] Consisting of Australia, New Zealand, Japan, Korea, US, Canada, Mexico, the EU members, UK, and other OECD Europe countries (Iceland, Liechtenstein, Norway and Switzerland).

around two times the world average in many manufacturing sectors including electronic products (5.0%). In China, the AVE rates in mining (3.2%) and chemical products (5.1%) are more than two times the world averages. In the EU, the AVE rate in electronic products (2.8%) is higher than that in the other manufacturing sectors.

III. Significance of spillover effects

A few key parameters are used to estimate the impact of NTM reductions by means of economic model simulations. One is the actionability of NTM reductions. NTMs are distinguished from non-tariff barriers (NTBs), and some of them would be justifiable from perspectives including safety rather than economically restrictive to protect trade. The magnitudes of impact of reductions of NTMs under FTAs/EPAs would be proportional to the actionable ratios of NTM reductions as well as to the measured levels of AVEs of NTMs prior to their reductions.

A second key parameter is the degree of the spillover effects of NTM reductions. Many NTMs would be related to regulations behind the border and hence could not be reduced on a preferential basis among the members of FTAs/EPAs, which is different from tariff reductions. The changes in NTMs would be applied universally to the non-member economies of FTAs/EPAs as if on a Most Favored Nation (MFN) basis. The sensitivities of the impacts of NTM reductions in the four alternative CPTPP expansion scenarios listed below, with respect to the extent of those spillover effects in terms of real GDP impact, are compared in Table 2, assuming the actionability of the NTM reductions at 50%. It is also assumed here that the United Kingdom (UK) would join CPTPP as the twelfth member.

CPTPP:	reductions by the eleven CPTPP members
US:	reductions by the twelve CPTPP members and the US
China:	reductions by the twelve CPTPP members and China
US and China:	reductions by the twelve CPTPP members, the US and China

It is indicated that the impact of NTM reductions under CPTPP would largely be affected by the degree of spillover effects. The average real GDP of the eleven CPTPP members is estimated to increase by 2.05% when NTM reductions would be applied to non-member economies to the full extent, which is around four times that when NTM reductions were not applied to non-members (0.52%). That said, the relative significance of those spillover effects would vary among the economies. For example, Australia's real GDP is estimated to increase by 1.34% under full spillovers, which is around two times that under no spillovers (0.61%). On the other hand, Japan's real GDP is estimated to increase around fivefold under full spillovers (2.76%) as opposed to 0.53% under no

Table 2 Ranges of spillover effects of NTM reductions

	CPTPP		US		China		US and China	
	none	full	none	full	none	full	none	full
Australia	0.61	1.34	0.85	1.46	2.45	2.85	2.60	2.93
New Zealand	2.18	4.33	2.96	4.61	3.67	4.85	4.11	5.01
Japan	0.53	2.76	1.09	2.80	2.37	3.44	2.68	3.48
Brunei	0.89	1.58	0.71	1.43	1.30	2.04	1.09	1.89
Malaysia	0.97	1.88	0.93	1.41	2.13	2.20	1.70	1.72
Singapore	0.66	1.31	0.78	1.37	1.47	1.57	1.38	1.62
Viet Nam	1.36	4.36	3.47	5.29	3.79	5.26	4.64	5.63
Canada	0.22	1.12	1.16	1.44	0.55	1.17	1.34	1.48
Mexico	0.19	0.56	2.04	0.57	0.24	0.27	0.79	0.30
Chile	0.39	1.98	1.76	3.05	1.99	2.83	3.22	3.88
Peru	0.42	2.44	1.46	2.67	2.13	3.91	3.10	4.14
CPTPP above	0.52	2.05	1.27	2.18	1.87	2.63	2.28	2.74
UK	-0.01	0.08	0.49	0.74	0.51	0.73	0.66	0.80
US	-0.02	0.09	0.68	1.76	-0.10	0.31	1.24	1.98
China	-0.04	0.32	-0.30	0.78	1.73	3.98	2.65	4.39
APEC	0.09	0.60	0.44	1.41	0.80	1.82	1.60	2.60

Source: Author's simulations.

spillovers. This could be explained by differences in the relative size of non-member trade partners among member economies.

The above variation is also suggested under the alternative scenarios of the US joining CPTPP and/or China joining CPTPP. The larger the CPTPP member economy, the smaller the relative significance of spillover effects. Total real GDP of the eleven CPTPP members is estimated to increase by 2.74% under full spillovers when the US and China together joined CPTPP, which is not so much larger than that under no spillovers (2.28%). On the other hand, the possibility of "free rider" gains from NTM reductions through spillover effects is suggested, though to a small extent. The US (0.09%) and China (0.32%) would benefit from full CPTPP spillover effects. That said, US benefit of the US joining CPTPP, which ranges between 0.68% and 1.76% of GDP, as well as China's benefit of China joining, between 1.73% and 3.98%, would be larger than the benefits under CPTPP without joining.

IV. <u>Concluding remarks</u>

The actual impact of FTAs/EPAs would be studied based on the conclusions of the agreements. In addition to the actionability of NTM reductions, which is the primary determinant of economic impact, the degree of spillover effects would need to be well examined.